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10/564,287	04/18/2008	Ryuji Fuchikami	2005_1973A	7551
52349 7590 10/12/2011 WENDEROTH, LIND & PONACK L.L.P. 1030 15th Street, N.W. Suite 400 East Washington, DC 20005-1503				
EXAMINER				
COYER, RYAN D				
ART UNIT		PAPER NUMBER		
2197				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary**Application No.**

10/564,287

Applicant(s)

FUCHIKAMI, RYUJI

Examiner

RYAN COYER

Art Unit

2197

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-21 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-21 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 11 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIB) Paper No(s)/Mail Date 1/11/2006
- 4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

This is in response to Application 10564287, filed on 1/11/2006, in which claims 1-21 are presented for examination. Claims 1, 13, 15, 16, 17, 18, and 21 are in independent form.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 21 is rejected under 35 U.S.C. 101 because the claim is directed toward software, per se. The instant claims recite a "compiler" comprising a "language-parsing unit" and a "code-generating unit," none of which positively recite any sort of computing hardware. Applicant is encouraged to amend the instant claim to recite hardware, e.g., "a computer processor coupled to a random-access memory."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-4 and 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter Applicant regards as the invention. Claim 3 recites the limitation "wherein the failure-recovering information includes items of a fixed size attribute and a variable size

attribute." It is unclear whether this limitation should signify an alternative choice between a "fixed sized attribute" and a "variable size attribute," or whether the Applicant intended the limitation to encompass several items of fixed size and one variable size attribute. Examiner will adopt the former approach, but clarification is respectfully requested. Claims 4 and 8-10 are dependents of claims 3-4 and inherit the deficiencies of their parent claims.

Furthermore, claims 8-9 recite, respectively, the limitations "upper expanding attribute and a downward illegal access" and "lower expanding attribute and an upward illegal access," which are indistinct for at least the following reasons. First, the words "upper" and "lower" appear to be synonymous, as used, with the words "upward" and "downward," but may instead be synonymous with the words "top" and "bottom." These alternative interpretations are not consistent with one another. Second, the words "downward" and "upward" as claimed denote movement relative to another point in space. No such other point is recited, so it is impossible to discern from the claims in which direction, precisely, the "illegal access" is occurring. Appropriate correction and/or clarification is required. In the interest of compact prosecution, the instant claims will be examined as if they were amended such that the words "upward" and "downward" were excised.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

or

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5, 11, and 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Molnar, USPGPUB 2004/0250105, hereinafter "Molnar."

Regarding claim 1, Molnar anticipates "[a]n **information-processing method**,
comprising:

relating range information and failure-recovering information to an address of a memory; (see, e.g., fig. 5 & associated text; para. 29-32; sec. 504; "Execution of address outside shield attempted?"; an attempt to exceed the permissible range is detected according to range information associated with one or more memory locations)

performing ordinary processes while detecting illegal access to the memory; (see, e.g., fig. 5 & associated text; para. 29-32; sec. 502; task executes normally until illegal access is detected)

judging upon detection of the illegal access to the memory whether or not failure-recovering is possible based on the range information and the failure-recovering information; (see, e.g., fig. 5 & associated text; para. 29-32; "the handler then interprets the kind of exception / fault that occurred, and then decides whether to abort depending on the circumstances") **and**

performing failure-recovering processes when the failure-recovering is possible." (see, e.g., fig. 5 & associated text; para. 29-32; "the operating system kernel saves the state of all registers and the state of the application so that it can be restored if the error is recoverable.").

Regarding claim 2, Molnar anticipates "[t]he information-processing method as claimed in claim 1, further comprising: performing halt processes when the failure-recovering is not possible." (see, e.g., para. 30-32; "the fault is not recoverable--the application is killed and the parent process of the application is notified.").

Regarding claim 5, Molnar anticipates "[t]he information-processing method as claim 2, wherein said performing failure-recovering processes includes storing data if the data is storable." (see, e.g., fig. 5 & associated text; para. 29-32; "the operating system kernel saves the state of all registers and the state of the application so that it can be restored if the error is recoverable.").

Regarding claim 11, Molnar anticipates "[t]he information-processing method as claimed in claim 1, wherein said performing failure-recovering processes includes: allocating some other area of the memory than an area of the memory where the illegal access has occurred; and accessing the other area of the memory allocated by said allocating." (see, e.g., para. 27-29).

Regarding claims 13-16, the scope of the instant claims does not differ substantially from that of claims 1-2. Accordingly, the rejection of claim 1 applies,

mutatis mutandis, to claims 13 and 15-16, and the rejection of claim 2 applies, *mutatis mutandis*, to claim 14.

Claims 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Chase et al., USPAT 6,149,318, hereinafter "Chase."

Regarding claim 17, Chase anticipates "[a] **compile method, comprising: compiling a source code written in programming language supporting a pointer**; (see, e.g., col. 4 ln. 25-60; "The invention described herein includes a collection of techniques whose purpose is to improve the state of the art in link-time and run-time error detection in high-level languages such as C and C++, and to improve the state of the art in adding instrumentation to programs for the purpose of run-time error detection, code coverage, or for any other analysis of programs at run-time.")

generating a code for the pointer to point to a variable area according to the source code, the pointer including a pointer value; (see, e.g., col. 19 ln. 44 – col. 20 ln. 60; "Each stack header contains a pointer to a stack of local variable information tables and parameter/result information blocks, and a small cache of memory blocks used to allow lock-free allocation of stack data structures. Each local variable information table contains an encoding of all the local scopes within the routine, the variables active in those scopes, and the names, types, and addresses of these variables.") **and**

setting to the pointer value a set of an address of the variable area, range information of the variable area, and failure-recovering information utilized when

illegal access to the variable area occurs.” (see, e.g., col. 19 ln. 44 – col. 20 ln. 60; col. 17 ln. 10-55; “A single number indicates the desired state of the local variables table, and if a different state is discovered, it is clear which information in the table is ambiguous and must be discarded (the consistent state is the nearest ancestor of the expected and actual scopes; any information for scopes younger than that must be discarded”; “two important errors to check in C and C++ programs are indexing off the end of an array and improperly interpreting the contents of memory. To report these errors at run time an error checker must be able to discover the bounds of an array and determine whether an address references memory of a particular type. Furthermore, this process must be efficient. An instrumentor inserts calls to the run-time system to enable it to maintain a record of what types and bounds are associated with which addresses, and to query this information for purposes of reporting errors. The instrumentor could be a human programmer, or a source-to-source translator, or a source-to-object translator.”).

Regarding claim 18, the scope of the instant claim does not differ substantially from that of claims 17. Accordingly, the rejection of claim 17 applies, *mutatis mutandis*, to claim 18.

Regarding claim 19, Molnar anticipates “**[t]he compile method as claimed in claim 17, wherein the failure-recovering information is managed separately from the source code.**” (see, e.g., col. 19 ln. 44 – col. 20 ln. 60; the “complex data structure” is not populated in source code).

Regarding claim 20, Molnar anticipates “[t]he compile method as claimed in claim 17, further comprising: adding the failure-recovering information to the source code to generate an intermediate code.” (see, e.g., figs 5-5J; col. 16 ln. 60 - col. 17 ln. 25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-4 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar in view of Chase.

Regarding claim 3, Molnar anticipates “[t]he information-processing method as claimed in claim 1,” but does not explicitly disclose the further limitation “wherein the failure-recovering information includes items of a fixed size attribute and a variable size attribute.” However, Chase discloses the aforementioned limitation.

(See, e.g., figs 5-5J; col. 16 ln. 60 - col. 17 ln. 25; "Two important errors to check in C and C++ programs are indexing off the end of an array and improperly interpreting the contents of memory. To report these errors at run time an error checker must be able to discover the bounds of an array and determine whether an address references memory of a particular type. Furthermore, this process must be efficient. An instrumentor inserts calls to the run-time system to enable it to maintain a record of what types and bounds are associated with which addresses, and to query this information for purposes of reporting errors. The instrumentor could be a human programmer, or a source-to-source translator, or a source-to-object translator.").

Chase and Molnar are directed to software verification and therefore are analogous art. At the time of the invention, one of ordinary skill in the art would have considered it obvious to modify the teachings of Molnar to include those of Chase. A clear benefit and source of motivation for so doing would have been the ability to detect illegal access to arrays of variable size. Accordingly, the instant claim is unpatentable over Molnar in view of Chase.

Regarding claim 4, Molnar, in view of Chase, obviates "[t]he information-processing method as claimed in claim 3, wherein the variable size attribute includes an upper expanding attribute and a lower expanding attribute." (See, e.g., Chase, figs 5-5J; col. 17 ln. 10 - col. 18 ln. 65; heaps expand upwards; stacks expand downwards).

Regarding claim 8, Molnar, in view of Chase, obviates "[t]he information-processing method as claimed in claim 4, wherein said judging determines that

the failure-recovering is not possible when the failure-recovering information indicates an upper expanding attribute and a downward illegal access to the memory is detected." (See, e.g., Chase, figs 5-5J; col. 17 ln. 10 - col. 18 ln. 65; heaps expand upwards; stacks expand downwards, improper access to a heap would be improper access to an upper expanding attribute).

Regarding claim 9, Molnar, in view of Chase, obviates "[t]he information-processing method as claimed in claim 4, wherein said judging determines that the failure-recovering is not possible when the failure-recovering information indicates a lower expanding attribute and an upward illegal access to the memory is detected." (See, e.g., Chase, figs 5-5J; col. 17 ln. 10 - col. 18 ln. 65; heaps expand upwards; stacks expand downwards, improper access to the stack would be improper access to a downward expanding attribute).

Regarding claim 10, Molnar, in view of Chase, obviates "[t]he information-processing method as claimed in claim 4, wherein said judging determines that the failure-recovering is not possible when the failure-recovering information indicates a fixed size attribute." (See, e.g., figs 5-5J; col. 16 ln. 60 - col. 17 ln. 25; determining that failure-recovery is impossible may occur when the illegally accessed attribute is of a constant size).

Claims 6-7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar in view of Demsky et al., USPAT 7,260,746, hereinafter "Demsky."

Regarding claim 6, Molnar anticipates “[t]he information-processing method as claimed in claim 1,” but does not explicitly disclose the further limitations “wherein said performing failure-recovering processes includes: judging whether an access type is of read access or of write access; and performing failure-recovering whose content is different according to said judging.” However, Demsky discloses the aforementioned limitations. (See, e.g., Demsky, abstract, “In the event that a data structure is determined to be inconsistent, the data structure may be repaired. In the event that the repair fails in connection with a read or a write operation, the executing program may optionally take steps to allow the program to continue execution. In connection with a read operation, any value may be returned as a result of the read. In connection with a write operation, the data to be written is discarded such that no write of data is performed and program execution continues. The detection and repairs are determined in accordance with user specifications.”; fig. 18-19 & associated text).

Demsky and Molnar are directed to software verification and therefore are analogous art. At the time of the invention, one of ordinary skill in the art would have considered it obvious to modify the teachings of Molnar to include those of Demsky. A clear benefit and source of motivation for so doing would have been the ability to tailor error recovery to specific situations based on the type of the failed operation. Accordingly, the instant claim is unpatentable over Molnar in view of Demsky.

Regarding claim 7, Molnar, in view of Demsky, obviates “[t]he information-processing method as claimed in claim 6, wherein failure-recovering without a

specific process is performed when the access type is of write access, and failure-recovering after storing a predetermined value into a current address of the memory is performed when the access type is of read access.” (See, e.g., Demsky, abstract, “In connection with a read operation, any value may be returned as a result of the read. In connection with a write operation, the data to be written is discarded such that no write of data is performed and program execution continues. The detection and repairs are determined in accordance with user specifications.”; col. 3 ln. 14 – col. 4 ln. 44).

Regarding claim 12, Molnar, in view of Demsky, obviates “[t]he information-processing method as claimed in claim 1, wherein the failure-recovering information includes an item of a terminator attribute, and wherein, when the terminator attribute indicates that data should have a terminated value at the end, said failure-recovering processes includes adding the terminated value to the end of the data.” (see, e.g., Demsky, fig. 18-19 & associated text; “The repair shows in the file system as a change in the FAT entry for block 2 from 1 to -1. The repair technique corrects corrupted values in the FAT table, such as change the FAT entry for block 1 from 5 to -1 (indicating that block 1 is the last block in its file block chain) and change the FAT entry for block 3 from -1 to -2 (indicating that block 3 is free).”).

Conclusion

The prior art made of record on form PTO-892, “Notice of References Cited,” but not relied upon in the above rejections, is considered pertinent to applicant’s disclosure.

The aforementioned prior art addresses subject matter disclosed in the specification but not necessarily presented in the instant claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN D. COYER, whose telephone number is (571) 270-5306, and whose fax number is (571) 270-6306. The examiner normally may be reached via phone on Mon-Thurs, 9a-8p. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Li B. Zhen, can be reached on (571) 272-3768. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ryan D. Coyer/
Examiner, Art Unit 2197

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